SECTION 13915 - FIRE PROTECTION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification sections, apply to this section.

1.2 SUMMARY

A. This Section specifies revised sprinkler head locations for remodeled areas of the project. The contractor shall review the existing layout in the remodel area of project and reposition existing sprinkler heads for proper sprinkler coverage. Materials and equipment specified in this Section include:
1. Pipe, fittings, valves, and specialties.
2. Sprinklers and accessories.

B. This is a "performance" specification. Approved design work is required of the contractor as part of this work.

1.3 DEFINITIONS

A. Pipe sizes used in this Specification are Nominal Pipe Size (NPS).

B. NFPA is the National Fire Protection Association. Referenced standards are the latest edition.

C. Other definitions for fire protection systems are listed in NFPA Standard 13 and NFPA 96.

D. Working Plans as used in this Section means those documents (including drawings and calculations) prepared pursuant to the requirements contained in NFPA 13 for obtaining approval of the authority having jurisdiction.

E. For the purpose of this specification, a "sprinkled building" means that all areas are sprinkled according to the provisions of NFPA 13.

1.4 SYSTEM DESCRIPTION

A. All remodeled areas of the building be sprinklered in accordance with light hazard as verified by NFPA 13 latest edition. All piping shall be concealed behind or above room finishes except in unfinished areas and mechanical areas. The sprinkler system will be designed in accordance with NFPA 13 hazard requirements.

B. Fire protection system is a "wet-pipe" system employing automatic sprinklers attached to a piping system containing water and connected to a new water supply so that water discharges immediately from sprinklers opened by fire.
1. Installation of fire sprinkler heads and branch piping where required to create a "sprinkled" building.

a. Only the crawlspace and mechanical room may have exposed piping and rough bronze sprinkler heads.
b. All other areas, shall have concealed piping and semi-recessed polished chrome sprinkler heads with chrome plated escutcheons.
c. Sprinkler piping shall be routed through heated, non-freezing areas, so piping will not freeze and anti-freeze and dry pipe systems will not be required.

3. The most efficient piping and head layout may be used except in the following areas.
a. All corridors. Heads shall be installed along the centerline of the corridor and in the exact center of the ceiling tiles.
b. In all cases, comply with the requirements of paragraphs 1.6 and 1.7 of this specification.

1.5 SUBMITTALS

A. Product Data for each type sprinkler head, valve, piping specialty, and fire protection specialty.

B. Maintenance Data for each type sprinkler head, valve, piping specialty, and fire protection specialty, specified, for inclusion in operating and maintenance manual specified in Division 1 and Division - 15 Section "Basic Mechanical Requirements."

C. Welders' qualification certificates.

D. Test Reports and Certificates include "Contractor's Material & Test Certificate for Aboveground Piping" as described in NFPA 13.

E. Designer Qualification: Provide written certification that designer is NICET level III Certified.

1.6 QUALITY ASSURANCE

A. Installer Qualifications: Installation and alterations of fire protection piping, equipment, specialties, and accessories, and repair and servicing of equipment shall be performed only by a qualified installer. The term qualified means experienced in such work (experienced shall mean having a minimum of 5 previous projects similar in size and scope to this project), familiar with all precautions required, and has complied with all the requirements of the authority having jurisdiction. Upon request, submit evidence of such qualifications. Refer to Division-1 Section: "Definitions and Standards" for definitions for "Installers."

B. Qualifications for Welding Processes and Operators: Comply with the requirements of AWS D10.9, Specifications for Qualifications of Welding Procedures and Welders for Piping and Tubing, Level AR-3."

C. Regulatory Requirements: Comply with the requirements of the following codes:
1. NFPA 13 - Light hazard and ordinary hazard group 1 - Standard for the Design and Installation of Sprinkler Systems, latest edition.
2. Polybutylene pipe is not allowed, regardless of its listing.
6. Existing Conditions:
a. For connections and systems involving existing system risers, this Contractor shall verify that the existing system riser is configured and functioning properly according to NFPA-13.

8. UL and FM Compliance: Fire protection system materials and components shall be Underwriter's Laboratories listed and labeled, and Factory Mutual approved for the application anticipated.

1.7 SEQUENCING AND SCHEDULING

A. Schedule rough-in installations with installations of other building components.

B. Piping layout shall not interfere with other engineered building components such as structure, mechanical ductwork, sloped DWV piping, lighting, and electrical panels, feeders, etc.

C. Maintain 12 inches clearance between removable ceiling tiles and horizontal sprinkler piping. Where structure, HVAC, electrical, or plumbing systems interfere with this location, adjust sprinkler piping upwards, if possible.

PART 2 - PRODUCTS

1.1 MANUFACTURERS

A. Manufacturer: Subject to compliance with requirements, provide fire protection system products from one of the following or approved equal:
1. Grooved Mechanical Couplings:
   a. Gustin-Bacon
   b. Stockham
   c. Victaulic
2. Sprinkler Heads:
   a. Automatic Sprinkler Corp of America.
   b. Central Sprinkler Corp.
   c. Firematic Sprinkler Devices, Inc.
   d. Globe Fire Equipment Co.
   e. Guardian Automatic Sprinkler Co., Inc.
   f. ITT Grinnell
   g. Reliable Automatic Sprinkler Co., Inc.
   h. Star Sprinkler Corp.
   i. Viking Corp.

2.2 PIPE AND TUBING MATERIALS

A. General: Pipe and tube used in fire sprinkler systems shall meet or exceed Section 2-3 of NFPA - 13.

B. All piping shall be rated for use in an air plenum according to the Uniform Mechanical Code, latest edition.

C. Fire wall penetration for pipes shall meet the requirements of the Uniform Building Code, latest edition. The pipe penetration through the fire rated wall shall meet the UL rating of the wall. Refer to Division 7 for special sealers and material.

2.3 PIPE FITTINGS

A. Pipe Fittings shall meet or exceed Section 2-4 of NFPA - 13.

2.4 JOINING MATERIALS

A. Welding Materials: Comply, with Section II, Part C, ASME Boiler and Pressure Vessel Code for welding materials appropriate for the wall thickness and chemical analysis of the pipe being welded.
   1. Brazing Filler Metals: AWS A5.8, Classification BCuP series.
   2. Solder Filler Metals: ASTM B32, 95-5 Tin-Antimony.

B. Gasket Materials: thickness, material, and type suitable for fluid or gas to be handled, and design temperatures and pressures.

2.6 AUTOMATIC SPRINKLERS

A. Sprinkler Heads: fusible link type, and style as indicated or required by the application. Unless otherwise indicated, provide heads with nominal 15 mm discharge orifice, for "Ordinary" temperature range.
   1. Where ordinary temp. range is inappropriate, provide higher temp. heads.

B. Sprinkler Head Finishes: Provide heads with the following finishes:
   1. Upright, Pendent, and Sidewall Styles: chrome plated in finish spaces, exposed to view; rough bronze finish for heads in unfinished spaces and not exposed to view.
   2. Recessed Style: bright chrome, with bright chrome escutcheon plate.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine field conditions thoroughly for suitability.

B. Notify the Owner of unsuitable conditions.

C. Do not proceed until unsatisfactory conditions have been corrected.

3.2 PIPING INSTALLATIONS

A. Install sprinkler piping to provide for system drainage in accordance with NFPA 13.

B. Use approved fittings to make all changes in direction, branch takeoffs from mains, and reductions in pipe sizes.

C. Install unions in pipes 2 inches (50 mm) and smaller, adjacent to each valve. Unions are not required on flanged devices or in piping installations using grooved mechanical couplings.

D. Hangers and Supports: Comply with the requirements of NFPA 13. Hanger and support spacing and locations for piping joined with grooved mechanical couplings shall be in accordance with

the grooved mechanical coupling manufacturer's written instructions, for rigid systems. Provide protection form damage where subject to earthquake in accordance with NFPA 13.

3.3 PIPE JOINT CONSTRUCTION

A. Welded Joints: AWS D10.0, Level AR-3.

B. Threaded Joints: conform to ANSI B1.20.1, tapered pipe threads for field cut threads. Join pipe, fittings, and valves as follows:
1. Note the internal length of threads in fittings or valve ends, and proximity of internal seat or wall, to determine how far pipe should be threaded into joint.
2. Align threads at point of assembly.
3. Apply appropriate tape or thread compound to the external pipe threads.
4. Assemble joint to appropriate thread depth. When using a wrench on valves place the wrench on the valve end into which the pipe is being threaded.
5. Damaged Threads: Do not use pipe with threads which are corroded, or damaged. If a weld opens during cutting or threading operations, that portion of pipe shall not be used.

C. Mechanical Grooved Joints: cut or roll grooves on pipe ends dimensionally compatible with the couplings.

D. End Treatment: after cutting pipe lengths, remove burrs and fins from pipe ends.

E. Solder Joints: Comply with procedures contained in the Copper Development Association, "Handbook for Fire Sprinkler Systems".

F. Brazed Joints: Comply with the procedures contained in the AWS "Brazing Manual".

3.4 SPRINKLER HEAD INSTALLATIONS

A. Use proper tools to prevent damage during installations.

3.5 FIELD QUALITY CONTROL

A. Flush, test, and inspect sprinkler piping systems in accordance with NFPA 13.

B. Replace piping system components, which do not pass the test procedures specified, and retest repaired portion of the system.

C. Maintain drawings on the job site updated daily for modifications. Use these drawings to prepare record drawings at project close out.

3.6 PROJECT CLOSEOUT

A. Provide a qualified representative to be present for all flow and other functional tests performed by the authority having jurisdiction. Assist in such tests, at least to the extent of identifying all valves and controls, and demonstrate their use if requested.

B. Provide a complete set of Record Drawings showing the actual piping and head layout, sizes, etc. Highlight all points of manual operation including but not limited to drains, shut-off valves, and alarms. In the case that major deviations from the existing layout provide Hydraulic Calculations to ensure flow and pressure is maintained. The Owner shall be the judge of whether deviations are major.

END OF SECTION 13915